



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,273	08/11/2005	Javier Marti Sendra	027318-00007	1001
4372 7590 07/01/2008 ARENT FOX LLP 1050 CONNECTICUT AVENUE, N.W. SUITE 400 WASHINGTON, DC 20036				
EXAMINER ROJAS, OMAR R				
ART UNIT 2874		PAPER NUMBER		
NOTIFICATION DATE 07/01/2008		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DCIPDocket@arentfox.com
IPMatters@arentfox.com
Patent_Mail@arentfox.com

Office Action Summary

Application No.

10/524,273

Applicant(s)

MARTI SENDRA ET AL.

Examiner

OMAR ROJAS

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2008.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-13 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 7-13 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SI/02)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☒ Other: Document "U" listed on PTO-892

DETAILED ACTION

Response to Amendment

1. With regards to the amendment filed on 04/03/2008, all the requested changes to the claims and specification have been entered. Claim(s) 7-13 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 7-13 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Photonic crystal tapers for ultracompact mode conversion" to Happ et al., published in OPTICS LETTERS, Vol. 26, No. 14, July 15, 2001, in view of Patent No. US 6,738,551 B2 to Noda et al. ("Noda").

In re claim 7, the Happ et al. article discloses a system for coupling optical guides, comprising:

a dielectric optical guide ("ridge waveguide"),

a planar photonic crystal ("PC") waveguide coupled to the dielectric optical guide, both guides forming a coupling structure (see the Abstract of Happ et al.), the PC waveguide having a gradual variation in width ("taper"). See the entire Happ et al. article for further details. Figure 2 of Happ et al. is reproduced below.

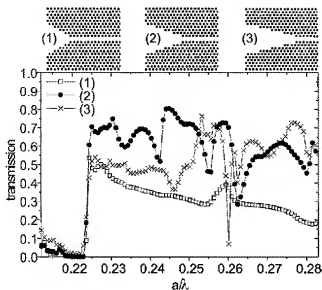


Fig. 2. Comparison of transmission spectra for various PC taper geometries with step size (1), (2), and (3) lattice constants.

In re claim 8, since the claimed range has no stated boundaries, it can be considered infinite and, thus, the claimed range reads upon the Happ et al. device because both the ridge waveguide and the PC waveguide of Happ et al. inherently have a height, width, and a shape.

In re claim 9, the PC waveguide of Happ et al. has a triangular grid/lattice as mentioned in the Abstract. Since the claimed range has no stated boundaries, it can be considered infinite and, thus, the claimed range reads upon the Happ et al. device because the PC waveguide of Happ et al. inherently has a grid constant, a radius of the crystal, a height of the crystal, and differences in indices between the crystal and a material above and below the crystal.

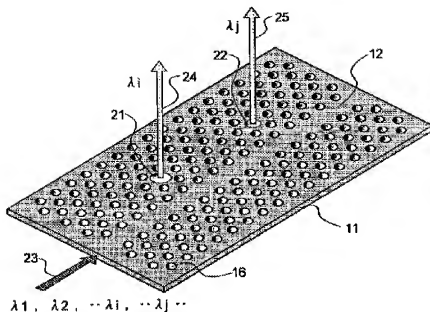
In re claim 10, since the claimed range has no stated boundaries, it can be considered infinite and, thus, the claimed range reads upon the Happ et al. device because the ridge waveguide of Happ et al. inherently has a configuration and refractive indices.

In re claim 11, since the claimed range has no stated boundaries, it can be considered infinite and, thus, the claimed range reads upon the Happ et al. device because the PC waveguide of Happ et al. inherently has a width and a type.

In re claim 13, since the claimed range has no stated boundaries, it can be considered infinite and, thus, the claimed range reads upon the Happ et al. device because the ridge waveguide of Happ et al. inherently has a height of the core/nucleus and layers surrounding the nucleus.

Thus, Happ et al. only differs from claims 7-11 and 13 in that he does not teach a plurality of point defects introduced in at least one of the optical guide or the PC waveguide, wherein each of the plurality of point defects has at least one selected from a group consisting of a radius of a point defect, a dielectric constant of the point defect, a relative position of the point defect, and a height of the point defect. Noda, on the other hand, shows a plurality of point defects **21, 22** (see Fig. 2) formed by changing the diameter of the point defect (see Fig. 6) that are useful for wavelength demultiplexing. *See* Noda at column 6, lines 10-34 for further details. Fig. 2 of Noda is reproduced below.

FIG. 2



The point defects of Noda could have been incorporated into the PC waveguide of Happ et al. for providing demultiplexing functionality in Happ et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claim 7-11 and 13 in view of Happ et al. combined with Noda.

In re claim 12, since the claimed "optimum number" could be any number and the claimed "characteristic" could be any characteristic, claim 12 reads upon the Noda device because Noda discloses two point defects 21 and 22 that inherently have some chosen characteristic. Therefore, the invention of claim 12 is considered unpatentable over Happ et al. combined with Noda for the same reasons mentioned with respect to claims 7-11 and 13.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Omar Rojas whose telephone number is (571) 272-2357. The examiner can normally be reached on Monday-Friday (9:00PM-5:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick, can be reached on (571) 272-2344. The official facsimile number for regular and After Final communications is (571) 273-8300. The examiner's RightFAX number is (571) 273-2357.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

Art Unit: 2874

applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Omar Rojas/

Patent Examiner, Art Unit 2874

/Rodney Bovernick/

Supervisory Patent Examiner

Art Unit 2874

or

June 27, 2008